



# LEARNER AND LEARNING IN DIGITAL ERA: SOME ISSUES AND CHALLENGES

Dr. RAJVIR SINGH

Assistant Professor, Department of Education, Kurukshetra University, Kurukshetra.

## ABSTRACT

Digital technologies are transforming our everyday life and also all factors that are associated with learning that may be associated with learner, type of learning & experiences, and resources or environment. Learning in digital era is an active and constructive process rather than a passive and reproductive process; more 'data-driven', substantial and concrete; and the focus has now shifted on 'knowledge creation' than on 'knowledge acquisition'. Researches and Reports (like NMC Horizon Report Europe: 2014) on School Education shown that now a day 'informal learning' is much more engaging and effective than 'formal learning'. Context of learner has also changed drastically in digital era in terms of social context – social norms, values, interactions due to intervention of new approaches, thoughts and social philosophies, influence of mass media, information and communication technology and innovations. Learner is learning through new channels of interaction, networking and communication. Knowledge practices of learner such as methods of acquiring knowledge; styles of learning; ways of applying skills and knowledge; and ways of correlating and linking acquired knowledge has transformed drastically. The rigidity of general classrooms in terms of fixed norms, fixed roles of learner and the teacher, strict rules, set behaviours and thinking patterns are now relaxed or made flexible in era of digitization. Now, learner wants to learn anywhere, anytime, at his own speed, through his own ways and styles and at his own terms and conditions; and he is learning in this way in present era of digitization.

With this digital transformation in context of learner and learning there also evolved certain issues and challenges like issue of skills required; challenge of taking social responsibilities on part of community, teachers & learner; challenge of data storage; issue of accessibility; and issue of reliability and validity of data. These issues need early redresses otherwise these issues become so complex that they may go beyond human control and create a chaos in the environment. Through this paper the researcher tried to elaborate these issues and challenges.

**KEYWORDS:** Digitization, Flexible Approach, Reflective Level of Learning, Digital Divide, Half-Life of Knowledge, Digital Vellum, Digital Dark Age.

*'One classroom, one teacher, one source, one subject and one topic at a time'* - does this sort of learning works for a learner in the present digital era? The answer is certainly – 'not'. Substantial revolution in all spheres of human life has been brought about by science and technology. It transformed the ways how people live, communicate with each other, interact with each other, play, study or work, access information, and exchange information. It also transformed the context of learner i.e. how they learn? Learning needs and theories that describe learning principles and processes got transformed and even the social environment has also transformed (Siemens, 2005).

Digital Era also referred as Computer Era or New Media Age or Third Industrial Revolution is the Era that is characterized by conversion of mechanical, electrical and analog technology to digital technology. This era facilitate economical technology for society, support e-governance and is in favour of providing services through digital mode. Increased quantum and pace of knowledge turnover and promotion of miniaturization is the specific feature of this era and it all leads to transformation of traditional society into digital society.

In India, National e-Governance Plan (NeGP) was initiated in 2006 by Department of Electronics and Information Technology (DeitY) under Ministry of Electronics and Information Technology (MeitY) with 27 Mission Mode Projects covering wide range of domains – Agriculture, Land Records, Taxation, Court, Health, Education etc. in order to bring e-Kranti in all spheres of life of Indian citizens. It stressed on development of National Optical Fibre Network and BharatNet to connect rural areas with high speed internet; e-Governance; government services to be available to all digitally; digital lockers; e-Education; e-Health etc. Further, in order to give a boost to the mission of e-Governance and also to overcome the shortcomings of NeGP, Government of India launched an umbrella programme i.e. Digital India Programme on July 01, 2015 for transforming India into digitally empowered society and knowledge economy. The programme totally revamped the National e-Governance Plan (NeGP) and has laid specific emphasis on:

- Creation of digital infrastructure and environment
- e-Governance and delivering services digitally
- Promotion of digital literacy – for digital empowerment of Indian citizens
- Development of National Optical Fibre Network and BharatNet to connect rural areas with high speed internet
- Covering wide range of domains (portfolio raised to 44 Mission Mode Projects including e-Governance; governmental services, facilities & aid to be available to all digitally; unique ID; NIC restructuring; digital lockers; e-Education; e-Health etc.)

## Learner and learning in digital era

Learning occupies a very important place in life of all individuals, as what an individual do or do not do is totally influenced by what he learn and how he learn. An individual starts learning immediately after his birth and continues learning till his death. Learning is a universal, continuous & never-ending (from womb to tomb) process. *"Learning is an episode in which a motivated individual attempts to adapt his behaviour so as to succeed in a situation which he perceives as requiring action to attain a goal"* as stated by Pressey, Robinson & Horrocks (1967). Some perceive it as an attempt of an individual to adjust him in the existing environment as Gardner Murphy (1968) stated that – *"The term 'learning' covers every modification in behaviour to meet environmental requirements"*. Learning includes change, modification, adjustment, adaptation and even discontinuance or abandonment of behaviour (unlearning). Change in behaviour may be positive or negative but it is always purposeful & goal-oriented; and nearly covers all fields – conative, cognitive & affective domains. Learning is a process and not a product. It involves varying ways, methods or styles; but totally excludes change in behaviour due to ripening and unfolding of inherited traits, native response tendencies (instincts, reflexes etc.), maturation (Hunt, 1968), fatigue, drugs, illness, imprinting (Lorenz, 1952) etc.

## Factors affecting learning

Learning is affected by various factors – that may be associated with learner; type of learning & experiences; and resources or environment.

Factors associated with learner, includes physical and mental health of the learner; his readiness, will & determination to learn; potentials & abilities; basic interests, attitudes & aptitude; aspiration level and achievement motivation; and also the goals or purposes set by him for himself. Factors associated with the type of learning and experiences includes nature of experiences, content or subject matter to be learned; ways, methods, approaches and techniques employed for learning; to what extent the processes of correlation, assimilation, revision & practice involved; provision of feedback and reinforcement in proper level and at appropriate time schedules; and also the extent of application of 'what has been learned'. Factors associated with the resources includes the availability, quality and management of human and material resources associated with learning like teachers, teaching learning material and aids including ICT and other innovations, environment including institutional as well as classroom climate and home environment etc. (Mangal, 2015).

'Digitization' across the globe is also making substantial impact on learner as well as learning across the world. None aspect of learner and learning remained untouched by the influence of digitization.

## Concept of 'Learning' transformed totally in digital era

The three basic and widely acknowledged theories of learning i.e. 'behaviourism', 'cognitivism' and 'constructivism' were developed when learning

was not impacted by technology (Siemens, 2005). Digital technologies are transforming our everyday life and also all factors that are associated with learning that may be associated with learner, type of learning & experiences, and resources or environment. In present digital era learning has become an active and constructive process rather than a passive and reproductive process. Focus is now on 'knowledge creation' than on 'knowledge acquisition' and learning is more 'data-driven', substantial and concrete. Researches and Reports (like NMC Horizon Report Europe: 2014; Published by New Media Consortium in collaboration with the EDUCAUSE Learning Initiative – an EDUCAUSE Program) on School Education shown that now a day 'informal learning' is much more engaging and effective than 'formal learning'. Major stake of learning is now a day comprised of informal learning.

Context of Learner has also changed drastically in this digital era in terms of:

- Social context – social norms, values, interactions etc.
- Intervention of new approaches, thoughts and social philosophies
- Impact of mass media, innovations and technology: Technology is continuously altering the thinking process of learner, his mind, his behaviour and approach towards learning.
- Influence of information and communication technology: Learner is learning through new channels of interaction, networking and communication.
- Knowledge practices of learner changed drastically – methods of acquiring knowledge; styles of learning; ways of applying skills and knowledge; and ways of correlating and linking acquired knowledge has transformed.

Marc Prensky (2012) pointed out that “*Today's students are no longer the people our educational system was designed to teach*” [As quoted by Lonka, K. & Cho, V. (2015), *Innovative Schools: Teaching & Learning in the Digital Era* - Workshop Documentation].

#### 'Digitization' – breaking the rigidity in learning & learner's context

The major advantage of this era is that 'learner' is at the centre, and he is much more self-directed and self-motivated. Digitization facilitated the 'Flexible Approach' in learning. The rigidity of general classrooms in terms of fixed norms, fixed roles of learner and the teacher, strict rules, set behaviours and thinking patterns are now relaxed or made flexible in this era of digitization.

#### Now, learner wants to learn

- Anywhere
- Anytime
- At his own speed
- Through his own ways and styles
- At his own terms and conditions

And he is learning in this way in this era of digitization.

#### Learner and learning in digital era: Some issues and challenges

With this digital transformation in context of learner and learning there also evolved certain issues and challenges that need early redresses. Some of the major issues and challenges in this context are:

1. Issue of skills required
2. Challenge of taking social responsibilities
  - Responsibility on part of community
  - Responsibility on part of teachers
  - Responsibility on part of learner
3. Challenge of data storage
4. Issue of accessibility
5. Issue of reliability and validity of data

**1. Issue of skills required:** In this era of digitization a learner can realise his learning objectives through effective learning by proper utilization of the learning environment if and only if he is in possession of certain skills that are at the core of this era and are a basic necessity for all individuals. No individual can survive in this era without the possession of these necessary skills. These necessary skills are generally referred as 21<sup>st</sup> Century Skills or New Forms of Skills. Technological advancements itself induces in people the urge to think divergently or differently in creative manner in order to address the emerging new types of issues (Lubart & Guignard, 2004. As quoted by Lai & Viering, 2012 in - *Assessing 21<sup>st</sup> Century Skills: Integrating Research Findings*).

One of the major challenge of this era of digitization in context of learner and learning is to ensure promotion of 21<sup>st</sup> Century Skills or New Forms of Skills in learners that includes digital literacy and basic skills of ICT; skill needed for access as well as proper and wise use of digital resources, search engines,

gazettes, artificial intelligence etc; skills of managing and processing of data or information. These skills will further strengthen by induction of convergent and divergent thinking, problem solving skills, innovative and scientific bent. And possession of these skills facilitates the development of skills required at 'Reflective Level of Learning' and the skills needed in 'Knowledge Creation'. Further the skills of collaboration, association and communication are also necessary in context of learning and learner. There is also a need of developing a sense of awareness so that they must imbibe such etiquettes that they become techno-friendly or techno-savvy in context of the prevailing socio-cultural and ethical context.

**2. Challenge of taking social responsibilities:** Rights, access, privacy, self-determination and personal control are the fundamental assumptions about information and human beings on which the foundation of information society must be laid rather than on privilege, power and special interest; and it is the duty of all those stakeholders who are involved in the planning, development and implementation of such information systems that are facilitating the social transformation, that they must understand their social responsibilities and act accordingly for the benefit of society and all its citizens (Rogerson, 2004). This transformation of society may lead to either empowering or enslavement of humans and it all depends on the extent of dedication, sincerity and honesty of these stakeholder in discharging their duties and responsibilities in this context.

*Responsibility on part of community in context of learner and learning in digital era* is that the community must ensure equity and equality in access of resources and devices needed for learning by a learner in the era of digitization otherwise it may result in creation of a 'digital divide' [DeHann, 2000 & Organisation for Economic Co-operation and Development (OECD), 2001]. Community must take the responsibility of creating supporting environment and facilitate the transformation as per the demand of the digitalization. A better understanding of social-cultural norms and ethics as per changing perspective should be promoted by the community and the needed attitudinal change must be brought up and cultivated in a proper way.

*Responsibility on part of teachers in context of learner and learning in digital era* is that the teacher themselves need to be in possession of such 21<sup>st</sup> Century Skills; they must be digitally competent and must be aware of wise, critical and judicious use of such skills. They must possess such skills that facilitate the desired teaching learning environment and make learning more focussed by filtering the distractions. There is also a need of knowledge of such assessment skills on part of teachers that are effective and employable in digital era. Teacher must also transform their attitudes towards technology and digitization and must understand and facilitate – how to use technology more to support learning rather than distracting it.

*Responsibility on part of learner in context of learning in digital era* is that the learner must learn and master the so needed 21<sup>st</sup> Century Skills and must get acquaint himself about proper, judicious and wise use of those skills, digital resources and services. He must understand the digital ethics and hence must respect the individuality and privacy of others. The learner must understand the value of equality and collaborative learning and he must follow it with true spirit from the core of his heart. They must be self-directed and self-motivated but not techno-driven and must follow a techno-savvy approach by avoiding distractions.

**3. Challenge of data storage:** Digital era is characterized by production of knowledge and information at exponential rate. The knowledge turnover is at such a high speed that it will go out of human control in near future and it would become difficult to manage for humans (Shepherd, 2004). Half-life of knowledge is diminishing at a very fast rate. According to Gonzalez (2004) - “*One of the most persuasive factors is the shrinking half-life of knowledge. The “half-life of knowledge” is the time span from when knowledge is gained to when it becomes obsolete. Half of what is known today was not known 10 years ago. The amount of knowledge in the world has doubled in the past 10 years and is doubling every 18 months according to the American Society of Training and Documentation (ASTD). To combat the shrinking half-life of knowledge, organizations have been forced to develop new methods of deploying instruction*” (As quoted by Siemens, 2005).

According to BBC News (27 April, 2015), Data specialist EMC estimated that world contained about 4.4 zettabytes (4.4 trillion gigabytes) of data in 2013 and it is expected that it would raise to tenfold by 2020. So much of data is generated daily, that a scarcity of space for data storage is being felt across the world. How to preserve the digital data or information for longer period is another challenge that is demanding early solution; and hence the need of creating 'Digital Vellum' is urged by many stakeholders in this regard.

Another worry is the cases of easy loss of data that may be due to deletion by chance or mistake, corruption willingly or unwillingly, theft, obsolescence and any sort of accidents, disasters – natural or man-made, or any sort of cyber-warfare. It all may lead the present civilization to a 'Digital Dark Age'.

**4. Issue of accessibility:** Proper and uninterrupted access of network is a big issue that need to be addressed so that the learning may not be got interrupted. It need a proper understanding and resolution of basic factors involving in this

issue like cost factor (in browsing or online subscription), change or advancement in operating systems, updated modern browsers and updated versions of writing, creating or editing etc. Another worry is the cases of such data that may be well preserved but unreadable because of loss of interpreting keys or dropping compatibility or some other reason.

**5. Issue of reliability and validity of data:** Since the content or information is being generated in abundance daily, so, enormous data or information is now available to the learner. Now, it is the dire need of time that the learner must understand that it is his duty to ensure the authenticity, reliability and validity of the accessed data before using it. Further, distractions and issues like – hacking, tempering etc. need to be addressed properly and timely for facilitating better learning environment.

These issues need early redresses otherwise these issues become so complex that they may go beyond human control and create a chaos in the environment. For that a substantial collaborative effort is needed from all stakeholders. Further, the challenges earmarked through this paper in this context must be accepted & countered with true spirit and the desired steps must be initiated as early as possible. **Collaborative learning that involves a proper amalgamation of 'Virtual Space' (physical space, technology & tools etc.), 'Mental Space' (personal learning activities) and 'Social Space' (collaborative learning activities and responsibilities) may prove substantial and effective in this context and it should be promoted.**

## REFERENCES

1. Burns, T. W., O'Connor, D. J. & Stocklmayer, S. M. (2003). Science communication: A contemporary definition. *Public Understanding of Science*, 12, 183. Retrieved from [sass.caltech.edu/events/BurnsStocklmayerOConnor\\_WhatIsSciComm\\_PUS.pdf](http://sass.caltech.edu/events/BurnsStocklmayerOConnor_WhatIsSciComm_PUS.pdf)
2. Department of Information Technology, Ministry of Communication and Information Technology, Saaransh: A Compendium of Mission Mode Projects under NeGP. (2011). New Delhi: The National e-Governance Division, Department of Information Technology, Ministry of Communication and Information Technology. Government of India. Retrieved from [http://meity.gov.in/sites/upload\\_files/dit/files/Compendium\\_FINAL\\_Version\\_220211\(1\).pdf](http://meity.gov.in/sites/upload_files/dit/files/Compendium_FINAL_Version_220211(1).pdf)
3. Framework for 21st Century Learning. Retrieved from <http://www.p21.org/about-us/p21-framework>
4. Indian National Science Academy (2001). Chapter IV - Pursuit and Promotion of Science: The Indian Experience. Indian National Science Academy. Retrieved from <http://www.iisc.ernet.in/insa/>
5. Information Age. Retrieved from [https://en.wikipedia.org/wiki/Information\\_Age](https://en.wikipedia.org/wiki/Information_Age)
6. Lai, E. R. & Viering, M. (2012). Assessing 21st Century Skills: Integrating Research Findings. Vancouver, BC: National Council on Measurement in Education. Retrieved from [http://researchnetwork.pearson.com/wp-content/uploads/Assessing\\_21st\\_Century\\_Skills\\_NCME.pdf](http://researchnetwork.pearson.com/wp-content/uploads/Assessing_21st_Century_Skills_NCME.pdf)
7. Lonka, K. & Cho, V. (2015). Innovative Schools: Teaching & Learning in the Digital Era - Workshop Documentation. European Parliament's Committee on Culture and Education: Directorate-General for Internal Policies, Policy Department B: Structural and Cohesion Policies. Retrieved from [http://www.europarl.europa.eu/RegData/etudes/STUD/2015/563389/IPOL\\_STU\(2015\)563389\\_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/STUD/2015/563389/IPOL_STU(2015)563389_EN.pdf)
8. Mangal, S. K. (2015). Advanced educational psychology. Delhi: PHI Learning Private Limited.
9. Mukherjee, A. (2007). Science Education in India. *The Hindu*, August 16, 2007. Retrieved from [www.thehindu.com/todays-paper/tp-opinion/science-education-in-india/article1892821.ece](http://www.thehindu.com/todays-paper/tp-opinion/science-education-in-india/article1892821.ece)
10. Murphy, G. (1968). An introduction to psychology. New Delhi: Oxford & IBH.
11. National e-Governance Plan. Ministry of Electronics & Information Technology, Government of India. Retrieved from <http://meity.gov.in/content/national-e-governance-plan>
12. National Policy on Education, 1986. A policy perspective teacher education for twenty first century: New challenge of preparing normal teachers for integrated schools, 189-190. New Delhi: Ministry of Human Resource Development.
13. National Policy on Information Technology. (2012). Retrieved from [http://meity.gov.in/sites/upload\\_files/dit/files/National\\_20IT\\_20Policy%20\\_20.pdf](http://meity.gov.in/sites/upload_files/dit/files/National_20IT_20Policy%20_20.pdf)
14. Pressey, Robinson & Horrocks. (1967). Psychology in education. Delhi: University Book Stall.
15. Rogerson, S. (2004). Aspects of social responsibility in the information society. In Doukidis, G.; Mylonopoulos, N. & Poulodi, N. (Ed.). *Social and economic transformation in the digital era*. Retrieved from <http://www.igi-global.com/chapter/digital-era/29024>
16. Science and Technology Policy 2013. (n.d.). Retrieved from [www.dst.gov.in/stsysindia/stp2013.htm](http://www.dst.gov.in/stsysindia/stp2013.htm)
17. Shepherd, J. (2004). What is the digital era? In Doukidis, G.; Mylonopoulos, N. & Poulodi, N. (Ed.). *Social and economic transformation in the digital era*. Retrieved from <http://www.igi-global.com/chapter/digital-era/29024>
18. Siemens, G. (2005). Connectivism: A learning theory for the digital age. *International Journal of Instructional Technology and Distance Learning (ITDL)*. Retrieved from [http://er.dut.ac.za/bitstream/handle/123456789/69/Siemens\\_2005\\_Connectivism\\_A\\_learning\\_theory\\_for\\_the\\_digital\\_age.pdf?sequence=1&isAllowed=y](http://er.dut.ac.za/bitstream/handle/123456789/69/Siemens_2005_Connectivism_A_learning_theory_for_the_digital_age.pdf?sequence=1&isAllowed=y)
19. The NMC Horizon Report: 2014 Library Edition. (2014). The New Media Consortium, University of Applied Sciences (HTW) Chur, Technische Informationsbibliothek (TIB) Hannover, and ETH-Bibliothek Zurich. Retrieved from <http://cdn.nmc.org/media/2014-nmc-horizon-report-library-EN.pdf>
20. Wall, M. (2015). Does the digital era herald the end of history? BBC News; 27 April, 2015. Retrieved from <http://www.bbc.com/news/technology-32315449>